## SEQUENCE LISTING

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      Pauley, Adele M.
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Cys Leu Ser Met Ser Thr Leu Glu Ser Val Thr Tyr Leu Pro Glu Lys
35 40 45

Gly Leu Tyr Cys Gln Arg Leu Pro Ser Ser Arg Thr His Gly Gly Thr
50 55 60

Glu Ser Leu Lys Gly Lys Asn Thr Glu Asn Met Gly Phe Tyr Gly Thr

| Leu Lys Met Il | e Phe Tyr Lys | Met Lys Arg L | ys Leu Asp His Gly Ser  |
|----------------|---------------|---------------|-------------------------|
|                | 85            | 90            | 95                      |
|                |               |               |                         |
| Glu Val Arg Se | r Phe Ser Leu | Gly Lys Lys P | Pro Cys Lys Val Ser Glu |
| 10             | 0             | 105           | 110                     |
|                |               |               |                         |
| Tyr Thr Ser Th | r Thr Gly Leu | Val Pro Cys S | Ser Ala Thr Pro Thr Thr |
| 115            |               | 120           | 125                     |
|                |               |               |                         |
| Phe Gly Asp Le | u Arg Ala Ala | Asn Gly Gln G | ly Gln Gln Arg Arg Arg  |
| 130            | 135           |               | 140                     |
|                |               |               |                         |
| Ile Thr Ser Va | l Gln Pro Pro | Thr Gly Leu G | In Glu Trp Leu Lys Met  |
| 145            | 150           | 1             | .55 160                 |
|                |               |               |                         |
| Phe Gln Ser Tr | p Ser Gly Pro | Glu Lys Leu L | eu Ala Leu Asp Glu Leu  |
|                | 165           | 170           | 175                     |
|                |               |               |                         |
| Ile Asp Ser Cy | s Glu Pro Thr | Gln Val Lys H | is Met Met Gln Val Ile  |
| 18             | 0             | 185           | 190                     |
|                |               |               |                         |
| Glu Pro Gln Ph | e Gln Arg Asp | Phe Ile Ser L | eu Leu Pro Lys Glu Leu  |
| 195            |               | 200           | 205                     |
|                |               |               |                         |
| Ala Leu Tyr Va | l Leu Ser Phe | Leu Glu Pro L | ys Asp Leu Leu Gln Ala  |
| 210            | 215           |               | 220                     |
|                |               |               |                         |
| Ala Gln Thr Cy | s Arg Tyr Trp | Arg Ile Leu A | ala Glu Asp Asn Leu Leu |
| 225            | 230           |               | 240                     |
| 225            | 230           | 2             | 35 240                  |

Trp Arg Glu Lys Cys Lys Glu Glu Gly Ile Asp Glu Pro Leu His Ile

Lys Arg Arg Lys Val Ile Lys Pro Gly Phe Ile His Ser Pro Trp Lys

| 260 | 265 | 270 |
|-----|-----|-----|
|     |     |     |

| Ser | Ala        | туг | Ile | Arg | Gln | His        | Arg | Ile | Asp | Thr | Asn        |     | Arg | Arg | Gly |
|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|
|     |            | 275 |     |     |     |            | 280 |     |     |     |            | 285 |     |     |     |
| Glu | Leu<br>290 | Lys | Ser | Pro | Lys | Val<br>295 | Leu | Lys | Gly | His | Asp<br>300 | Asp | His | Val | Ile |
|     | 2,50       |     |     |     |     | 2,3        |     |     |     |     | 300        |     |     |     |     |
| Thr | Cys        | Leu | Gln | Phe | Суѕ | Gly        | Asn | Arg | Ile | Val | Ser        | Gly | Ser | Asp | Asp |
| 305 |            |     |     |     | 310 |            |     |     |     | 315 |            |     |     |     | 320 |
| Asn | Thr        | Leu | Lys | Val | Trp | Ser        | Ala | Val | Thr | Gly | Lys        | Суѕ | Leu | Arg | Thr |
|     |            |     |     | 325 |     |            |     |     | 330 |     |            |     |     | 335 |     |
| Leu | Val        | Gly | His | Thr | Gly | Gly        | Val | Trp | Ser | Ser | Gln        | Met | Arg | Asp | Asn |
|     |            |     | 340 |     |     |            |     | 345 |     |     |            |     | 350 |     |     |
|     |            |     |     |     |     |            |     |     |     |     |            |     |     |     |     |
| Ile | Ile        | Ile | Ser | Gly | Ser | Thr        | Asp | Arg | Thr | Leu | Lys        | Val | Trp | Asn | Ala |
|     |            | 355 |     |     |     |            | 360 |     |     |     |            | 365 |     |     |     |
| Glu | Thr        | Gly | Glu | Cys | Ile | His        | Thr | Leu | Tyr | Gly | His        | Thr | Ser | Thr | Val |
|     | 370        |     |     |     |     | 375        |     |     |     |     | 380        |     |     |     |     |
|     |            |     |     |     |     |            |     |     |     |     |            |     |     |     |     |
| Arg | Суз        | Met | His | Leu | His | Glu        | Lys | Arg | Val | Val | Ser        | Gly | Ser | Arg | qaA |
| 385 |            |     |     |     | 390 |            |     |     |     | 395 |            |     |     |     | 400 |
|     |            |     |     | _   |     |            |     |     |     |     |            |     |     |     |     |
| Ala | Thr        | Leu | Arg |     | Trp | Asp        | Ile | Glu |     | Gly | Gln        | Cys | Leu |     | Val |
|     |            |     |     | 405 |     |            |     |     | 410 |     |            |     |     | 415 |     |
| Leu | Met        | Gly | His | Val | Ala | Ala        | Val | Arg | Cys | Val | Gln        | Tyr | Asp | Gly | Arg |
|     |            |     | 420 |     |     |            |     | 425 |     |     |            |     | 430 |     |     |
|     |            |     |     |     |     |            |     |     |     |     |            |     |     |     |     |

Glu Thr Glu Thr Cys Leu His Thr Leu Gln Gly His Thr Asn Arg Val
450 455 460

Arg Val Val Ser Gly Ala Tyr Asp Phe Met Val Lys Val Trp Asp Pro

Tyr Ser Leu Gln Phe Asp Gly Ile His Val Val Ser Gly Ser Leu Asp 465 470 475 480

Thr Ser Ile Arg Val Trp Asp Val Glu Thr Gly Asn Cys Ile His Thr
485 490 495

Leu Thr Gly His Gln Ser Leu Thr Ser Gly Met Glu Leu Lys Asp Asn 500 505 510

Ile Leu Val Ser Gly Asn Ala Asp Ser Thr Val Lys Ile Trp Asp Ile
515 520 525

Lys Thr Gly Gln Cys Leu Gln Thr Leu Gln Gly Pro Asn Lys His Gln 530 535 540

Ser Ala Val Thr Cys Leu Gln Phe Asn Lys Asn Phe Val Ile Thr Ser 545 550 555 555

Ser Asp Asp Gly Thr Val Lys Leu Trp Asp Leu Lys Thr Gly Glu Phe 565 570 575

Ile Arg Asn Leu Val Thr Leu Glu Ser Gly Gly Ser Gly Gly Val Val 580 585 590

Trp Arg Ile Arg Ala Ser Asn Thr Lys Leu Val Cys Ala Val Gly Ser 595 600 605

Arg Asn Gly Thr Glu Glu Thr Lys Leu Leu Val Leu Asp Phe Asp Val 610 615 620

Asp Met Lys

625

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| Met       Ser       Thr       Leu       Glu       Ser       Val       Thr       Tyr       Leu       Pro       Glu       Leu       Tyr         Cys       Gln       Arg       Leu       Pro       Ser       Ser       Arg       Thr       His       Gly       Gly       Thr       Glu       Ser       Leu         Lys       Gly       Lys       Asn       Thr       Glu       Asn       Met       Gly       Phe       Tyr       Gly       Thr       Leu       Lys       Met         Ile       Phe       Tyr       Lys       Met       Lys       Lys       Leu       Asp       His       Gly       Ser       Glu       Val       Arg         Ser       Phe       Ser       Leu       Gly       Lys       Lys       Leu       Asp       His       Gly       Ser       Glu       Val       Arg         Ser       Phe       Ser       Leu       Gly       Lys       Lys       Pro       Cys       Lys       Val       Ser       Glu       Tyr       Thr       Ser         65       70       Yes       Yes       Cys       Lys       Lys       Yes       Yes |
| Met       Ser       Thr       Leu       Glu       Ser       Val       Thr       Tyr       Leu       Pro       Glu       Leu       Tyr         Cys       Gln       Arg       Leu       Pro       Ser       Ser       Arg       Thr       His       Gly       Gly       Thr       Glu       Ser       Leu         Lys       Gly       Lys       Asn       Thr       Glu       Asn       Met       Gly       Phe       Tyr       Gly       Thr       Leu       Lys       Met         Ile       Phe       Tyr       Lys       Met       Lys       Lys       Leu       Asp       His       Gly       Ser       Glu       Val       Arg         Ser       Phe       Ser       Leu       Gly       Lys       Lys       Leu       Asp       His       Gly       Ser       Glu       Val       Arg         Ser       Phe       Ser       Leu       Gly       Lys       Lys       Pro       Cys       Lys       Val       Ser       Glu       Tyr       Thr       Ser         65       70       Yes       Yes       Cys       Lys       Lys       Yes       Yes |
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| Lys Gly Lys Asn Thr Glu Asn Met Gly Phe Tyr Gly Thr Leu Lys Met 35 40 55 60 50 60 50 60 60 60 60 60 60 60 60 60 60 60 60 60   |
| Lys Gly Lys Asn Thr Glu Asn Met Gly Phe Tyr Gly Thr Leu Lys Met 35 40 55 60 50 60 50 60 60 60 60 60 60 60 60 60 60 60 60 60   |
| Lys Gly Lys Asn Thr Glu Asn Met Gly Phe Tyr Gly Thr Leu Lys Met  35  40  45  Ile Phe Tyr Lys Met Lys Arg Lys Leu Asp His Gly Ser Glu Val Arg  50  55  60  Ser Phe Ser Leu Gly Lys Lys Pro Cys Lys Val Ser Glu Tyr Thr Ser  65  70  75  80   |
| 11e Phe Tyr Lys Met Lys Arg Lys Leu Asp His Gly Ser Glu Val Arg 50 55 60  Ser Phe Ser Leu Gly Lys Lys Pro Cys Lys Val Ser Glu Tyr Thr Ser 65 70 70 80   |
| 11e Phe Tyr Lys Met Lys Arg Lys Leu Asp His Gly Ser Glu Val Arg 50 55 60  Ser Phe Ser Leu Gly Lys Lys Pro Cys Lys Val Ser Glu Tyr Thr Ser 65 70 70 80   |
| Ile Phe Tyr Lys Met Lys Arg Lys Leu Asp His Gly Ser Glu Val Arg 50 55 60  Ser Phe Ser Leu Gly Lys Lys Pro Cys Lys Val Ser Glu Tyr Thr Ser 65 70 75 80   |
| Ser Phe Ser Leu Gly Lys Lys Pro Cys Lys Val Ser Glu Tyr Thr Ser 65 70 75 80   |
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|   |
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| 85 90 95  |
|   |
| Leu Arg Ala Ala Asn Gly Gln Gly Gln Arg Arg Arg Ile Thr Ser   |
| 100 105 110   |
|   |
| Val Gln Pro Pro Thr Gly Leu Gln Glu Trp Leu Lys Met Phe Gln Ser   |
| 115 120 125   |
|   |
| Trp Ser Gly Pro Glu Lys Leu Leu Ala Leu Asp Glu Leu Ile Asp Ser   |
| 130 135 140   |
|   |
| Cys Glu Pro Thr Gln Val Lys His Met Met Gln Val Ile Glu Pro Gln   |
| 145 150 155 160   |
|   |
| Phe Gln Arg Asp Phe Ile Ser Leu Leu Pro Lys Glu Leu Ala Leu Tyr   |
| 165 170 175   |

| Cys | Arg            | Tyr   | Trp | Arg   | Ile  | Leu | Ala  | Glu | Asp  | Asn | Leu   | Leu          | Trp | Arg      | Glu |
|-----|----------------|-------|-----|-------|------|-----|------|-----|------|-----|-------|--------------|-----|----------|-----|
|     |                | 195   |     |       |      |     | 200  |     |      |     |       | 205          |     |          |     |
|     |                |       |     |       |      |     |      |     |      |     |       |              |     |          |     |
| Lve | Cve            | Lve   | Glu | Glu   | G1v  | Tle | Asp  | Glu | Pro  | Leu | His   | Ile          | Lvs | Arg      | Arq |
| цуз |                | כעב   | 014 | 0     | 011  |     | -1-2 |     |      |     | 220   |              | -   |          | J   |
|     | 210            |       |     |       |      | 215 |      |     |      |     | 220   |              |     |          |     |
|     |                |       |     |       |      |     |      |     |      |     |       |              |     |          |     |
| Lys | Val            | Ile   | Lys | Pro   | Gly  | Phe | Ile  | His | Ser  | Pro | Trp   | Lys          | Ser | Ala      | Tyr |
| 225 |                |       |     |       | 230  |     |      |     |      | 235 |       |              |     |          | 240 |
|     |                |       |     |       |      |     |      |     |      |     |       |              |     |          |     |
| Ile | Arg            | Gln   | His | Arg   | Ile  | Asp | Thr  | Asn | Trp  | Arg | Arg   | Gly          | Glu | Leu      | Lys |
|     |                |       |     | 245   |      |     |      |     | 250  |     |       |              |     | 255      |     |
|     |                |       |     |       |      |     |      |     |      |     |       |              |     |          |     |
|     |                |       | _   |       |      |     | •    | _   | _    |     | **- 1 | <b>-</b> 1 - | m1  | <b>~</b> | T   |
| Ser | Pro            | Lys   | Val | Leu   | Lys  | GТĀ | His  | Asp | Asp  | HIS | vaı   | шe           |     | Cys      | Leu |
|     |                |       | 260 |       |      |     |      | 265 |      |     |       |              | 270 |          |     |
|     |                |       |     |       |      |     |      |     |      |     |       |              |     |          |     |
| Gln | Phe            | Cys   | Gly | Asn   | Arg  | Ile | Val  | Ser | Gly  | Ser | Asp   | Asp          | Asn | Thr      | Leu |
|     |                | 275   |     |       |      |     | 280  |     |      |     |       | 285          |     |          |     |
|     |                |       |     |       |      |     |      |     |      |     |       |              |     |          |     |
| Lvc | ₹ <i>7</i> ⇒ 1 | Фкъ   | Sar | λla   | Va 1 | Thr | Glv  | Lvs | Cvs  | Len | Ara   | Thr          | Leu | Val      | Gly |
| пуъ |                |       | Ser | AIG   | var  |     | Cly  | בעב | 0,10 | 200 |       |              |     | ,        | 1   |
|     | 290            |       |     |       |      | 295 |      |     |      |     | 300   |              |     |          |     |
|     |                |       |     |       |      |     |      |     |      |     |       |              |     |          |     |
| His | Thr            | Gly   | Gly | Val   | Trp  | Ser | Ser  | Gln | Met  | Arg | Asp   | Asn          | Ile | Ile      | Ile |
| 305 |                |       |     |       | 310  |     |      |     |      | 315 |       |              |     |          | 320 |
|     |                |       |     |       |      |     |      |     |      |     |       |              |     |          |     |
| Ser | Gly            | Ser   | Thr | Asp   | Arg  | Thr | Leu  | Lys | Val  | Trp | Asn   | Ala          | Glu | Thr      | Gly |
|     | -              |       |     | 325   |      |     |      |     | 330  |     |       |              |     | 335      |     |
|     |                |       |     | 323   |      |     |      |     |      |     |       |              |     |          |     |
|     |                |       |     |       |      |     |      |     |      |     |       | _            |     | _        |     |
| Glu | Суѕ            | Ile   | His | Thr   | Leu  | Tyr | Gly  | His | Thr  | Ser | Thr   | Val          | Arg | Cys      | Met |
|     |                |       | 340 |       |      |     |      | 345 |      |     |       |              | 350 |          |     |
|     |                |       |     |       |      |     |      |     |      |     |       |              |     |          |     |
| His | Leu            | . His | Glu | . Lys | Arg  | Val | Val  | Ser | Gly  | Ser | Arg   | Asp          | Ala | Thr      | Leu |
|     |                | 355   | i   |       |      |     | 360  |     |      |     |       | 365          | ,   |          |     |
|     |                |       |     |       |      |     |      |     |      |     |       |              |     |          |     |
|     |                |       |     |       |      |     |      |     |      |     |       |              |     |          |     |

Val Leu Ser Phe Leu Glu Pro Lys Asp Leu Leu Gln Ala Ala Gln Thr

|           | 370        |      |     |     |     | 375 |           |     |         |     | 380 |     |            |     |     |
|-----------|------------|------|-----|-----|-----|-----|-----------|-----|---------|-----|-----|-----|------------|-----|-----|
| His       | Val        | Ala  | Ala | Val | Arg | Суѕ | Val       | Gln | Tyr     | Asp | Gly | Arg | Arg        | Val | Val |
| 385       |            |      |     |     | 390 |     |           |     |         | 395 |     |     |            |     | 400 |
|           |            |      |     |     |     |     |           |     |         |     |     |     |            |     |     |
| Ser       | Gly        | Ala  | Tyr | Asp | Phe | Met | Val       | Lys | Val     | Trp | Asp | Pro | Glu        | Thr | Glu |
|           |            |      |     | 405 |     |     |           |     | 410     |     |     |     |            | 415 |     |
| mb w      | Crea       | T 0  | TT  | шь  | T   | Q1  | <b>01</b> | **  | <b></b> | •   | _   | 1   | _          | _   | _   |
| 1111      | Суѕ        | Leu  | 420 | THE | Leu | GIN | GIĀ       | 425 | Thr     | Asn | Arg | Val | Tyr<br>430 | Ser | Leu |
|           |            |      | 420 |     |     |     |           | 423 |         |     |     |     | 430        |     |     |
| Gln       | Phe        | Asp  | Gly | Ile | His | Val | Val       | Ser | Gly     | Ser | Leu | Asp | Thr        | Ser | Ile |
|           |            | 435  |     |     |     |     | 440       |     |         |     |     | 445 |            |     |     |
|           |            |      |     |     |     |     |           |     |         |     |     |     |            |     |     |
| Arg       | Val        | Trp  | Asp | Val | Glu | Thr | Gly       | Asn | Суѕ     | Ile | His | Thr | Leu        | Thr | Gly |
|           | 450        |      |     |     |     | 455 |           |     |         |     | 460 |     |            |     |     |
|           |            |      |     |     |     |     |           |     |         |     |     |     |            |     |     |
|           | Gln        | Ser  | Leu | Thr |     | Gly | Met       | Glu | Leu     |     | Asp | Asn | Ile        | Leu | Va1 |
| 465       |            |      |     |     | 470 |     |           |     |         | 475 |     |     |            |     | 480 |
| Ser       | Gly        | Asn  | Ala | Asp | Ser | Thr | Val       | Lvs | Tle     | Ψrn | Asn | T16 | Lve        | Thr | Glv |
|           | 3          |      |     | 485 |     |     |           | 2,5 | 490     | 112 | пор | 110 | БуЗ        | 495 | GIY |
|           |            |      |     |     |     |     |           |     |         |     |     |     |            |     |     |
| Gln       | Cys        | Leu  | Gln | Thr | Leu | Gln | Gly       | Pro | Asn     | Lys | His | Gln | Ser        | Ala | Val |
|           |            |      | 500 |     |     |     |           | 505 |         |     |     |     | 510        |     |     |
|           |            |      |     |     |     |     |           |     |         |     |     |     |            |     |     |
| Thr       | Сув        | Leu  | Gln | Phe | Asn | Lys | Asn       | Phe | Val     | Ile | Thr | Ser | Ser        | Asp | Asp |
|           |            | 515  |     |     |     |     | 520       |     |         |     |     | 525 |            |     |     |
| <b>61</b> | m1         | •• • | _   | _   | _   | _   |           | _   |         |     |     |     | _          |     |     |
| GIY       | Thr<br>530 | vaı  | гуs | Leu | Trp |     | Leu       | Lys | Thr     | Gly |     | Phe | Ile        | Arg | Asn |
|           | 230        |      |     |     |     | 535 |           |     |         |     | 540 |     |            |     |     |
| Leu       | Val        | Thr  | Leu | Glu | Ser | Gly | Gly       | Ser | Gly     | Gly | Val | Val | Trp        | Arq | Ile |
| 545       |            |      |     |     | 550 | _   | _         |     | _       | 555 |     |     | -          | -   | 560 |
|           |            |      |     |     |     |     |           |     |         |     |     |     |            |     |     |

Arg Val Trp Asp Ile Glu Thr Gly Gln Cys Leu His Val Leu Met Gly

Arg Ala Ser Asn Thr Lys Leu Val Cys Ala Val Gly Ser Arg Asn Gly

Thr Glu Glu Thr Lys Leu Leu Val Leu Asp Phe Asp Val Asp Met Lys

585

590

<210> 5
<211> 553
<212> PRT
<213> Homo sapiens

580

Lys Leu Asp His Gly Ser Glu Val Arg Ser Phe Ser Leu Gly Lys Lys
20 25 30

Pro Cys Lys Val Ser Glu Tyr Thr Ser Thr Thr Gly Leu Val Pro Cys
35 40 45

Ser Ala Thr Pro Thr Thr Phe Gly Asp Leu Arg Ala Ala Asn Gly Gln
50 55 60

Gly Gln Gln Arg Arg Arg Ile Thr Ser Val Gln Pro Pro Thr Gly Leu
65 70 75 80

Gln Glu Trp Leu Lys Met Phe Gln Ser Trp Ser Gly Pro Glu Lys Leu 85 90 95

Leu Ala Leu Asp Glu Leu Ile Asp Ser Cys Glu Pro Thr Gln Val Lys

100 105 110

|        | 1          | L15  |            |            |              |            | 120         |            |             |            | 1          | L25        |              |              |            |
|--------|------------|------|------------|------------|--------------|------------|-------------|------------|-------------|------------|------------|------------|--------------|--------------|------------|
| Leu Le |            | Pro  | Lys        | Glu        | Leu          | Ala<br>135 | Leu         | Tyr        | Val         | Leu        | Ser 1      | Phe 1      | Leu G        | lu P         | ro         |
| Lys As | sp :       | Leu  | Leu        | Gln        | Ala<br>150   | Ala        | Gln         | Thr        | Cys         | Arg<br>155 | Tyr '      | Trp .      | Arg ]        |              | ieu<br>160 |
| Ala G  | lu         | Asp  | Asn        | Leu<br>165 | Leu          | Trp        | Arg         | Glu        | Lys<br>170  | Cys        | Lys        | Glu        |              | 31y :<br>175 | Ile        |
| Asp G  | lu         | Pro  | Leu<br>180 |            | Ile          | Lys        | Arg         | Arg<br>185 |             | Val        | Ile        | Lys        | Pro<br>190   | Gly :        | Phe        |
| Ile H  | His        | Ser  |            | Trp        | Lys          | Ser        | Ala<br>200  |            | : Ile       | Arg        | Gln        | His<br>205 | Arg          | Ile          | Asp        |
| Thr A  | Asn<br>210 | Trp  | Arg        | , Arg      | , Gly        | Gli<br>215 |             | ı Lys      | s Ser       | Pro        | Lys<br>220 | Val        | Leu          | Lys          | Gly        |
| His 2  | Asp        | Asr  | Hi:        | s Val      | 1 Ile<br>230 |            | r Cy:       | s Le       | ı Glr       | n Phe      |            | Gly        | Asn          | Arg          | Ile<br>240 |
| Val    | Ser        | Gl:  | y Se       | r As       |              | p As       | n Th        | r Le       | u Ly:<br>25 |            | l Trp      | Ser        | · Ala        | Val<br>255   | Thr        |
| Gly    | Lys        | ; Су | s Le<br>26 |            | g Th         | r Le       | u Va        | 1 G1<br>26 |             | s Th       | r Gly      | / Gly      | y Val<br>270 |              | Ser        |
| Ser    | Glr        | n Me |            | g As       | p As         | n Il       | .e I1       |            | e Se        | r Gl       | y Sei      | 28!        | r Asp        | Arg          | Thr        |
| Leu    | Ly:        |      | ıl Tı      | ap As      | n Al         |            | lu Ti<br>95 | nr G       | Ly Gl       | lu Cy      | s Il       |            | s Thi        | . Leu        | ı Tyr      |

His Met Met Gln Val Ile Glu Pro Gln Phe Gln Arg Asp Phe Ile Ser

| Val Ser Gly Ser Arg Asp Ala Thr Leu Arg Val Trp Asp Ile Glu Thr  325 330 335    |
|---|
| Gly Gln Cys Leu His Val Leu Met Gly His Val Ala Ala Val Arg Cys  340 345 350    |
| Val Gln Tyr Asp Gly Arg Arg Val Val Ser Gly Ala Tyr Asp Phe Met 355 360 365     |
| Val Lys Val Trp Asp Pro Glu Thr Glu Thr Cys Leu His Thr Leu Gln 370 375 380     |
| Gly His Thr Asn Arg Val Tyr Ser Leu Gln Phe Asp Gly Ile His Val 385 390 395 400 |
| Val Ser Gly Ser Leu Asp Thr Ser Ile Arg Val Trp Asp Val Glu Thr 405 410 415     |
| Gly Asn Cys Ile His Thr Leu Thr Gly His Gln Ser Leu Thr Ser Gly 420 425 430     |
| Met Glu Leu Lys Asp Asn Ile Leu Val Ser Gly Asn Ala Asp Ser Thr  435 440 445    |
| Val Lys Ile Trp Asp Ile Lys Thr Gly Gln Cys Leu Gln Thr Leu Gln 450 455 460     |
| Gly Pro Asn Lys His Gln Ser Ala Val Thr Cys Leu Gln Phe Asn Lys 465 470 475 480 |
| Asn Phe Val Ile Thr Ser Ser Asp Asp Gly Thr Val Lys Leu Trp Asp 485 490 495     |

Gly His Thr Ser Thr Val Arg Cys Met His Leu His Glu Lys Arg Val

Leu Lys Thr Gly Glu Phe Ile Arg Asn Leu Val Thr Leu Glu Ser Gly Gly Ser Gly Gly Val Val Trp Arg Ile Arg Ala Ser Asn Thr Lys Leu Val Cys Ala Val Gly Ser Arg Asn Gly Thr Glu Glu Thr Lys Leu Leu Val Leu Asp Phe Asp Val Asp Met Lys <210> 6 <211> 545 <212> PRT <213> Homo sapiens <400> 6 Met Ile Phe Tyr Lys Met Lys Arg Lys Leu Asp His Gly Ser Glu Val Arg Ser Phe Ser Leu Gly Lys Lys Pro Cys Lys Val Ser Glu Tyr Thr Ser Thr Thr Gly Leu Val Pro Cys Ser Ala Thr Pro Thr Thr Phe Gly Asp Leu Arg Ala Ala Asn Gly Gln Gly Gln Gln Arg Arg Ile Thr Ser Val Gln Pro Pro Thr Gly Leu Gln Glu Trp Leu Lys Met Phe Gln Ser Trp Ser Gly Pro Glu Lys Leu Leu Ala Leu Asp Glu Leu Ile Asp

|      |     |     | 100 |     |     |     |     | 105        |            |     |     |          | 110   |            |       |
|------|-----|-----|-----|-----|-----|-----|-----|------------|------------|-----|-----|----------|-------|------------|-------|
| Gln  | Phe | Gln | Arg | Asp | Phe | Ile | Ser | Leu        | Leu        | Pro | Lys | Glu      | Leu   | Ala        | Leu   |
|      |     | 115 |     |     |     |     | 120 |            |            |     |     | 125      |       |            |       |
|      |     |     |     |     |     |     |     |            |            |     |     |          |       |            |       |
| Tyr  |     | Leu | Ser | Phe | Leu |     | Pro | Lys        | Asp        | Leu |     | Gln      | Ala   | Ala        | Gln   |
|      | 130 |     |     |     |     | 135 |     |            |            |     | 140 |          |       |            |       |
| Thr  | Cys | Arg | Tyr | Trp | Arg | Ile | Leu | Ala        | Glu        | Asp | Asn | Leu      | Leu   | Trp        | Arg   |
| 145  |     |     |     |     | 150 |     |     |            |            | 155 |     |          |       |            | 160   |
|      |     |     |     |     |     |     |     |            |            |     |     |          |       |            |       |
| Glu  | Lys | Суѕ | Lys |     | Glu | Gly | Ile | Asp        |            | Pro | Leu | His      | Ile   |            | Arg   |
|      |     |     |     | 165 |     |     |     |            | 170        |     |     |          |       | 175        |       |
| Arg  | Lys | Val | Ile | Lys | Pro | Gly | Phe | Ile        | His        | Ser | Pro | Trp      | Lys   | Ser        | Ala   |
| J    | -   |     | 180 | -   |     | _   |     | 185        |            |     |     |          | 190   |            |       |
|      |     |     |     |     |     |     |     |            |            |     |     |          |       |            |       |
| Туr  | Ile | Arg | Gln | His | Arg | Ile | Asp | Thr        | Asn        | Trp | Arg | Arg      | Gly   | Glu        | Leu   |
|      |     | 195 |     |     |     |     | 200 |            |            |     |     | 205      |       |            |       |
| Lare | Ser | Pro | Lve | ₩ 1 | LOU | Lve | Glv | ніс        | Agn        | Aen | ніс | Wa 1     | Tla   | Thr        | Cve   |
| цуБ  | 210 | 110 | טעט | var | Dea | 215 | CIJ |            | 1150       | p   | 220 | V 44 1   |       |            | 0,0   |
|      |     |     |     |     |     |     |     |            |            |     |     |          |       |            |       |
| Leu  | Gln | Phe | Cys | Gly | Asn | Arg | Ile | Va1        | Ser        | Gly | Ser | Asp      | Asp   | Asn        | Thr   |
| 225  |     |     |     |     | 230 |     |     |            |            | 235 |     |          |       |            | 240   |
|      | _   |     | _   | ~   | - 7 | 1   |     | <b>~</b> 1 | _          |     | _   | <b>.</b> | m1- · | <b>.</b>   | **. 1 |
| Leu  | гуs | Val | Trp | 245 | Ala | Val | Thr | GIY        | ьуs<br>250 | Cys | ьeu | Arg      | Thr   | ьеи<br>255 | vai   |
|      |     |     |     |     |     |     |     |            |            |     |     |          |       |            |       |
| Gly  | His | Thr | Gly | Gly | Val | Trp | Ser | Ser        | Gln        | Met | Arg | Asp      | Asn   | Ile        | Ile   |
|      |     |     | 260 |     |     |     |     | 265        |            |     |     |          | 270   |            |       |
|      |     |     |     |     |     |     |     |            |            |     |     |          |       |            |       |
| Ile  | Ser | Gly | Ser | Thr | Asp | Arg |     | Leu        | Lys        | Val | Trp |          | Ala   | Glu        | Thr   |
|      |     | 275 |     |     |     |     | 280 |            |            |     |     | 285      |       |            |       |

Ser Cys Glu Pro Thr Gln Val Lys His Met Met Gln Val Ile Glu Pro

| Gly | Glu   | Cys   | Ile   | His   | Thr   | Leu   | Tyr   | Gly   | His       | Thr   | Ser   | Thr   | Vai    | Arg   | Cys   |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-----------|-------|-------|-------|--------|-------|-------|
|     | 290   |       |       |       |       | 295   |       |       |           |       | 300   |       |        |       |       |
|     |       |       |       |       |       |       |       |       |           |       |       |       |        |       |       |
| Met | His   | Leu   | His   | Glu   | Lys   | Arg   | Val   | Val   | Ser       | Gly   | Ser   | Arg   | Asp    | Ala   | Thr   |
| 305 |       |       |       |       | 310   |       |       |       |           | 315   |       |       |        |       | 320   |
|     |       |       |       |       |       |       |       |       |           |       |       |       |        |       |       |
| Lou | Ara   | Val   | Φrn   | Δen   | Tle   | Glu   | Thr   | Glv   | Gln       | Cvs   | Leu   | His   | Val    | Leu   | Met   |
| ьеu | Arg   | Vai   | ııp   | 325   | 110   | O.L.  |       | 0-1   | 330       | -1-   |       |       |        | 335   |       |
|     |       |       |       | 343   |       |       |       |       | 330       |       |       |       |        |       |       |
| _   |       |       | _ 4   |       |       | _     |       | **. 1 | <b>01</b> | m     | 3     | C1    | 7 ~~ ~ | 7 ~~  | 175 l |
| Gly | His   | Val   |       | Ala   | Val   | Arg   | Cys   |       | GIN       | Tyr   | Asp   | GIY   |        | Arg   | Val   |
|     |       |       | 340   |       |       |       |       | 345   |           |       |       |       | 350    |       |       |
|     |       |       |       |       |       |       |       |       |           |       |       |       |        |       | _     |
| Va1 | Ser   | Gly   | Ala   | Tyr   | Asp   | Phe   | Met   | Val   | Lys       | Val   | Trp   | Asp   | Pro    | Glu   | Thr   |
|     |       | 355   |       |       |       |       | 360   |       |           |       |       | 365   |        |       |       |
|     |       |       |       |       |       |       |       |       |           |       |       |       |        |       |       |
| Glu | Thr   | Cys   | Leu   | His   | Thr   | Leu   | Gln   | Gly   | His       | Thr   | Asn   | Arg   | Val    | Tyr   | Ser   |
|     | 370   |       |       |       |       | 375   |       |       |           |       | 380   |       |        |       |       |
|     |       |       |       |       |       |       |       |       |           |       |       |       |        |       |       |
| Leu | Gln   | Phe   | Asp   | Gly   | Ile   | His   | Val   | Val   | Ser       | Gly   | Ser   | Leu   | Asp    | Thr   | Ser   |
| 385 |       |       |       |       | 390   |       |       |       |           | 395   |       |       |        |       | 400   |
|     |       |       |       |       |       |       |       |       |           |       |       |       |        |       |       |
| Ile | . Arg | Val   | Trp   | Asp   | Val   | Glu   | Thr   | Gly   | Asn       | Суз   | Ile   | His   | Thr    | Leu   | Thr   |
|     |       |       |       | 405   |       |       |       |       | 410       |       |       |       |        | 415   |       |
|     |       |       |       |       |       |       |       |       |           |       |       |       |        |       |       |
| Glu | , His | : Glr | Ser   | · Leu | ነ ጥከተ | Ser   | Glv   | Met   | Glu       | . Leu | . Lvs | Asp   | Asn    | Ile   | Leu   |
| 017 |       |       | 420   |       |       |       |       | 425   |           |       | _     |       | 430    |       |       |
|     |       |       | 420   | •     |       |       |       |       |           |       |       |       |        |       |       |
|     |       | ~1    |       |       | 3     |       | - mb  | 1     | T         | . T1a | . m~~ | , Acr | . Tle  | LVC   | Thr   |
| val | . ser |       |       | 1 Ala | l ASL | ser   |       |       | . nys     | , 116 | ; 1LL | 445   |        | . Dys | 1111  |
|     |       | 435   | )     |       |       |       | 440   | )     |           |       |       | 440   | •      |       |       |
|     |       |       |       |       |       |       |       |       |           |       |       |       |        | -     |       |
| Gly | / Glr | 1 Суя | s Lev | ı Glr | 1 Thi | : Lev | ı Glr | ı Gly | / Pro     | ) Asr |       |       | Gln    | . Ser | Ala   |
|     | 450   | )     |       |       |       | 455   | 5     |       |           |       | 460   | )     |        |       |       |
|     |       |       |       |       |       |       |       |       |           |       |       |       |        |       |       |
| Va: | LThi  | r Cy: | s Lei | ı Glr | n Phe | e Ası | ı Lys | s Ası | n Phe     | e Val | l Ile | e Thi | : Ser  | Ser   | Asp   |

Asp Gly Thr Val Lys Leu Trp Asp Leu Lys Thr Gly Glu Phe Ile Arg

485 490 495

Asn Leu Val Thr Leu Glu Ser Gly Gly Ser Gly Gly Val Val Trp Arg
500 505 510

Ile Arg Ala Ser Asn Thr Lys Leu Val Cys Ala Val Gly Ser Arg Asn
515 520 525

Gly Thr Glu Glu Thr Lys Leu Leu Val Leu Asp Phe Asp Val Asp Met
530 540

Lys

545

<210> 7

<211> 540

<212> PRT

<213> Homo sapiens

<400> 7

Met Lys Arg Lys Leu Asp His Gly Ser Glu Val Arg Ser Phe Ser Leu

1 5 10 15

Gly Lys Lys Pro Cys Lys Val Ser Glu Tyr Thr Ser Thr Thr Gly Leu
20 25 30

Val Pro Cys Ser Ala Thr Pro Thr Thr Phe Gly Asp Leu Arg Ala Ala 35 40 45

Asn Gly Gln Gly Gln Gln Arg Arg Ile Thr Ser Val Gln Pro Pro
50 55 60

Thr Gly Leu Gln Glu Trp Leu Lys Met Phe Gln Ser Trp Ser Gly Pro 65 70 75 80

|            |            |            |            | 85         |            |            |            |            | 90         |            |            |            |            | 95         |            |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Gln        | Val        | Lys        | His<br>100 | Met        | Met        | Gln        | Val        | Ile<br>105 | Glu        | Pro        | Gln        | Phe        | Gln<br>110 | Arg        | Asp        |
| Phe        | Ile        | Ser        | Leu        | Leu        | Pro        | Lys        | Glu<br>120 | Leu        | Ala        | Leu        | Tyr        | Val<br>125 | Leu        | Ser        | Phe        |
| Leu        | Glu<br>130 | Pro        | Lys        | Asp        | Leu        | Leu<br>135 | Gln        | Ala        | Ala        | Gln        | Thr<br>140 | Cys        | Arg        | Tyr        | Trp        |
| Arg        | Ile        | Leu        | Ala        | Glu        | Asp<br>150 | Asn        | Leu        | Leu        | Trp        | Arg<br>155 | Glu        | Lys        | Суз        | Lys        | Glu<br>160 |
| Glu        | Gly        | Ile        | Asp        | Glu<br>165 | Pro        | Leu        | His        | Ile        | Lys<br>170 | Arg        | Arg        | Lys        | Val        | Ile<br>175 | Lys        |
| Pro        | Gly        | Phe        | Ile<br>180 | His        | Ser        | Pro        | Trp        | Lys<br>185 | Ser        | Ala        | Tyr        | Ile        | Arg<br>190 | Gln        | His        |
| Arg        | Ile        | Asp<br>195 | Thr        | Asn        | Trp        | Arg        | Arg<br>200 | Gly        | Glu        | Leu        | Lys        | Ser<br>205 | Pro        | Lys        | Val        |
| Leu        | Lys<br>210 | Gly        | His        | Asp        | Asp        | Нis<br>215 | Val        | Ile        | Thr        | Суз        | Leu<br>220 | Gln        | Phe        | Суѕ        | Gly        |
| Asn<br>225 | Arg        | Ile        | Val        | Ser        | Gly<br>230 | Ser        | Asp        | Asp        | Asn        | Thr<br>235 | Leu        | Lys        | Val        | Trp        | Ser<br>240 |
| Ala        | Val        | Thr        | Gly        | Lys<br>245 | Суз        | Leu        | Arg        | Thr        | Leu<br>250 | Val        | Gly        | His        | Thr        | Gly<br>255 | Gly        |
| Val        | Trp        | Ser        | Ser<br>260 | Gln        | Met        | Arg        | Asp        | Asn<br>265 | Ile        | Ile        | Ile        | Ser        | Gly<br>270 | Ser        | Thr        |

Glu Lys Leu Leu Ala Leu Asp Glu Leu Ile Asp Ser Cys Glu Pro Thr

Asp Arg Thr Leu Lys Val Trp Asn Ala Glu Thr Gly Glu Cys Ile His

| 75 | 280 | 285 |
|----|-----|-----|
|    |     |     |

| Thr | Leu | Tyr | Gly | His | Thr | Ser | Thr | Val | Arg | Суѕ | Met | His | Leu | His | Glu |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|     | 290 |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |

- Lys Arg Val Val Ser Gly Ser Arg Asp Ala Thr Leu Arg Val Trp Asp 305 310 310 315 320
- Ile Glu Thr Gly Gln Cys Leu His Val Leu Met Gly His Val Ala Ala 325 330 335
- Val Arg Cys Val Gln Tyr Asp Gly Arg Arg Val Val Ser Gly Ala Tyr 340 345 350
- Asp Phe Met Val Lys Val Trp Asp Pro Glu Thr Glu Thr Cys Leu His
- Thr Leu Gln Gly His Thr Asn Arg Val Tyr Ser Leu Gln Phe Asp Gly 370 375 380
- Ile His Val Val Ser Gly Ser Leu Asp Thr Ser Ile Arg Val Trp Asp 385
- Val Glu Thr Gly Asn Cys Ile His Thr Leu Thr Gly His Gln Ser Leu 405 410 415
- Thr Ser Gly Met Glu Leu Lys Asp Asn Ile Leu Val Ser Gly Asn Ala
  420 425 430
- Asp Ser Thr Val Lys Ile Trp Asp Ile Lys Thr Gly Gln Cys Leu Gln 435
- Thr Leu Gln Gly Pro Asn Lys His Gln Ser Ala Val Thr Cys Leu Gln 450 455 460

Phe Asn Lys Asn Phe Val Ile Thr Ser Ser Asp Asp Gly Thr Val Lys

465 470 475 480

Leu Trp Asp Leu Lys Thr Gly Glu Phe Ile Arg Asn Leu Val Thr Leu
485 490 495

Glu Ser Gly Gly Ser Gly Gly Val Val Trp Arg Ile Arg Ala Ser Asn 500 505 510

Thr Lys Leu Val Cys Ala Val Gly Ser Arg Asn Gly Thr Glu Glu Thr
515 520 525

Lys Leu Leu Val Leu Asp Phe Asp Val Asp Met Lys
530 535 540

<210> 8

<211> 589

<212> PRT

<213> Homo sapiens

<400> 8

Met Ser Lys Pro Gly Lys Pro Thr Leu Asn His Gly Leu Val Pro Val

1 5 10 15

Asp Leu Lys Ser Ala Lys Glu Pro Leu Pro His Gln Thr Val Met Lys
20 25 30

Ile Phe Ser Ile Ser Ile Ile Ala Gln Gly Leu Pro Phe Cys Arg Arg
35 40 45

Arg Met Lys Arg Lys Leu Asp His Gly Ser Glu Val Arg Ser Phe Ser 50 55 60

Leu Gly Lys Lys Pro Cys Lys Val Ser Glu Tyr Thr Ser Thr Thr Gly
65 70 75 80

Leu Val Pro Cys Ser Ala Thr Pro Thr Thr Phe Gly Asp Leu Arg Ala

85 90 95

Ala Asn Gly Gln Gly Gln Gln Arg Arg Ile Thr Ser Val Gln Pro 100 105 110

Pro Thr Gly Leu Gln Glu Trp Leu Lys Met Phe Gln Ser Trp Ser Gly
115 120 125

Pro Glu Lys Leu Leu Ala Leu Asp Glu Leu Ile Asp Ser Cys Glu Pro 130 135 140

Thr Gln Val Lys His Met Met Gln Val Ile Glu Pro Gln Phe Gln Arg
145 150 150 155 160

Asp Phe Ile Ser Leu Leu Pro Lys Glu Leu Ala Leu Tyr Val Leu Ser 165 170 175

Phe Leu Glu Pro Lys Asp Leu Leu Gln Ala Ala Gln Thr Cys Arg Tyr
180 185 185 190

Trp Arg Ile Leu Ala Glu Asp Asn Leu Leu Trp Arg Glu Lys Cys Lys

195 200 205

Glu Glu Gly Ile Asp Glu Pro Leu His Ile Lys Arg Arg Lys Val Ile
210 215 220

Lys Pro Gly Phe Ile His Ser Pro Trp Lys Ser Ala Tyr Ile Arg Gln 225 230 230 240

His Arg Ile Asp Thr Asn Trp Arg Arg Gly Glu Leu Lys Ser Pro Lys
245 250 250 255

Val Leu Lys Gly His Asp Asp His Val Ile Thr Cys Leu Gln Phe Cys
260 265 270

Gly Asn Arg Ile Val Ser Gly Ser Asp Asn Thr Leu Lys Val Trp

275 280 285

Ser Ala Val Thr Gly Lys Cys Leu Arg Thr Leu Val Gly His Thr Gly Gly Val Trp Ser Ser Gln Met Arg Asp Asn Ile Ile Ile Ser Gly Ser Thr Asp Arg Thr Leu Lys Val Trp Asn Ala Glu Thr Gly Glu Cys Ile His Thr Leu Tyr Gly His Thr Ser Thr Val Arg Cys Met His Leu His Glu Lys Arg Val Val Ser Gly Ser Arg Asp Ala Thr Leu Arg Val Trp Asp Ile Glu Thr Gly Gln Cys Leu His Val Leu Met Gly His Val Ala Ala Val Arg Cys Val Gln Tyr Asp Gly Arg Arg Val Val Ser Gly Ala Tyr Asp Phe Met Val Lys Val Trp Asp Pro Glu Thr Glu Thr Cys Leu His Thr Leu Gln Gly His Thr Asn Arg Val Tyr Ser Leu Gln Phe Asp Gly Ile His Val Val Ser Gly Ser Leu Asp Thr Ser Ile Arg Val Trp 

Asp Val Glu Thr Gly Asn Cys Ile His Thr Leu Thr Gly His Gln Ser 450 455 460

Leu Thr Ser Gly Met Glu Leu Lys Asp Asn Ile Leu Val Ser Gly Asn 465 470 475 488

Ala Asp Ser Thr Val Lys Ile Trp Asp Ile Lys Thr Gly Gln Cys Leu 495 490 485 Gln Thr Leu Gln Gly Pro Asn Lys His Gln Ser Ala Val Thr Cys Leu 510 505 500 Gln Phe Asn Lys Asn Phe Val Ile Thr Ser Ser Asp Asp Gly Thr Val 525 520 515 Lys Leu Trp Asp Leu Lys Thr Gly Glu Phe Ile Arg Asn Leu Val Thr 540 535 530 Leu Glu Ser Gly Gly Ser Gly Gly Val Val Trp Arg Ile Arg Ala Ser 560 555 550 545 Asn Thr Lys Leu Val Cys Ala Val Gly Ser Arg Asn Gly Thr Glu Glu

570

575

Thr Lys Leu Leu Val Leu Asp Phe Asp Val Asp Met Lys 580 585

565

<210> 9

<211> 559

<212> PRT

<213> Homo sapiens

<400> 9

Met Lys Ile Phe Ser Ile Ser Ile Ile Ala Gln Gly Leu Pro Phe Cys

1 5 10 15

Arg Arg Arg Met Lys Arg Lys Leu Asp His Gly Ser Glu Val Arg Ser 20 25 30

Phe Ser Leu Gly Lys Lys Pro Cys Lys Val Ser Glu Tyr Thr Ser Thr

35 40 45

Thr Gly Leu Val Pro Cys Ser Ala Thr Pro Thr Thr Phe Gly Asp Leu 50 55 60

Arg Ala Ala Asn Gly Gln Gly Gln Arg Arg Arg Ile Thr Ser Val

Gln Pro Pro Thr Gly Leu Gln Glu Trp Leu Lys Met Phe Gln Ser Trp

85 90 95

Ser Gly Pro Glu Lys Leu Leu Ala Leu Asp Glu Leu Ile Asp Ser Cys
100 105 110

Glu Pro Thr Gln Val Lys His Met Met Gln Val Ile Glu Pro Gln Phe 115 120 125

Gln Arg Asp Phe Ile Ser Leu Leu Pro Lys Glu Leu Ala Leu Tyr Val

Leu Ser Phe Leu Glu Pro Lys Asp Leu Leu Gln Ala Ala Gln Thr Cys
145 150 150 160

Arg Tyr Trp Arg Ile Leu Ala Glu Asp Asn Leu Leu Trp Arg Glu Lys
165 170 175

Cys Lys Glu Glu Gly Ile Asp Glu Pro Leu His Ile Lys Arg Arg Lys
180 185 190

Val Ile Lys Pro Gly Phe Ile His Ser Pro Trp Lys Ser Ala Tyr Ile 195 200 205

Arg Gln His Arg Ile Asp Thr Asn Trp Arg Arg Gly Glu Leu Lys Ser 210 215 220

Pro Lys Val Leu Lys Gly His Asp Asp His Val Ile Thr Cys Leu Gln 225 230 230 235

| Phe Cys Gly Asn Arg Ile Val Ser Gly Ser Asp Asp Asn Thr Leu Lys  245 250 255   |
|--|
| 245 250 253  |
| Val Trp Ser Ala Val Thr Gly Lys Cys Leu Arg Thr Leu Val Gly His  |
| 260 265 270  |
| Thr Gly Gly Val Trp Ser Ser Gln Met Arg Asp Asn Ile Ile Ile Ser  |
| 275 280 285  |
| Gly Ser Thr Asp Arg Thr Leu Lys Val Trp Asn Ala Glu Thr Gly Glu 290 295 300  |
| 250  |
| Cys Ile His Thr Leu Tyr Gly His Thr Ser Thr Val Arg Cys Met His  |
| 305 310 315 320  |
|  |
| Leu His Glu Lys Arg Val Val Ser Gly Ser Arg Asp Ala Thr Leu Arg  |
| 325 330  |
| Val Trp Asp Ile Glu Thr Gly Gln Cys Leu His Val Leu Met Gly His  |
| 340 345 350  |
| and a ser oly are are val val Ser  |
| Val Ala Ala Val Arg Cys Val Gln Tyr Asp Gly Arg Arg Val Val Ser 355 360 365  |
| and the state of t |
| Gly Ala Tyr Asp Phe Met Val Lys Val Trp Asp Pro Glu Thr Glu Thr  |
| 370 375 300  |
| Cys Leu His Thr Leu Gln Gly His Thr Asn Arg Val Tyr Ser Leu Gln  |
| 385 390 395 400  |
|  |
| Phe Asp Gly Ile His Val Val Ser Gly Ser Leu Asp Thr Ser Ile Arg  |
| 405 410 415  |
| Val Trp Asp Val Glu Thr Gly Asn Cys Ile His Thr Leu Thr Gly His  |
| 420 425 430  |

Gly Asn Ala Asp Ser Thr Val Lys Ile Trp Asp Ile Lys Thr Gly Gln Cys Leu Gln Thr Leu Gln Gly Pro Asn Lys His Gln Ser Ala Val Thr Cys Leu Gln Phe Asn Lys Asn Phe Val Ile Thr Ser Ser Asp Asp Gly Thr Val Lys Leu Trp Asp Leu Lys Thr Gly Glu Phe Ile Arg Asn Leu Val Thr Leu Glu Ser Gly Gly Ser Gly Gly Val Val Trp Arg Ile Arg Ala Ser Asn Thr Lys Leu Val Cys Ala Val Gly Ser Arg Asn Gly Thr Glu Glu Thr Lys Leu Leu Val Leu Asp Phe Asp Val Asp Met Lys <210> 10 <211> 540 <212> PRT <213> Homo sapiens <400> 10 Met Lys Arg Lys Leu Asp His Gly Ser Glu Val Arg Ser Phe Ser Leu Gly Lys Lys Pro Cys Lys Val Ser Glu Tyr Thr Ser Thr Thr Gly Leu

Gln Ser Leu Thr Ser Gly Met Glu Leu Lys Asp Asn Ile Leu Val Ser

| Val Pro Cys Ser Ala Thr Pro Thr Thr Phe Gly Asp Leu Arg Ala Ala              |
|--|
| 35 40 45   |
| Asn Gly Gln Gln Gln Arg Arg Ile Thr Ser Val Gln Pro Pro 50 55 60             |
| Thr Gly Leu Gln Glu Trp Leu Lys Met Phe Gln Ser Trp Ser Gly Pro              |
| 65 70 75 80  |
| Glu Lys Leu Leu Ala Leu Asp Glu Leu Ile Asp Ser Cys Glu Pro Thr  85 90 95    |
| Gln Val Lys His Met Met Gln Val Ile Glu Pro Gln Phe Gln Arg Asp  100 105 110 |
| Phe Ile Ser Leu Leu Pro Lys Glu Leu Ala Leu Tyr Val Leu Ser Phe  115 120 125 |
| Leu Glu Pro Lys Asp Leu Leu Gln Ala Ala Gln Thr Cys Arg Tyr Trp  130 135 140 |
| Arg Ile Leu Ala Glu Asp Asn Leu Leu Trp Arg Glu Lys Cys Lys Glu              |
| 145 150 155 160  |
| Glu Gly Ile Asp Glu Pro Leu His Ile Lys Arg Arg Lys Val Ile Lys  165 170 175 |
| Pro Gly Phe Ile His Ser Pro Trp Lys Ser Ala Tyr Ile Arg Gln His  180 185 190 |
| Arg Ile Asp Thr Asn Trp Arg Gly Glu Leu Lys Ser Pro Lys Val                  |
| Leu Lys Gly His Asp Asp His Val Ile Thr Cys Leu Gln Phe Cys Gly              |

| 225                        | 230                  | 235                       | 240                    |
|----------------------------|----------------------|---------------------------|------------------------|
| Ala Val Thr Gly Lys        |                      | Thr Leu Val Gly H         | is Thr Gly Gly<br>255  |
| Val Trp Ser Ser Gln<br>260 | Met Arg Asp          | Asn Ile Ile Ile S         | er Gly Ser Thr<br>270  |
| Asp Arg Thr Leu Lys        | s Val Trp Asn<br>280 |                           | lu Cys Ile His         |
| Thr Leu Tyr Gly His        | 5 Thr Ser Thr<br>295 | Val Arg Cys Met F         | His Leu His Glu        |
| Lys Arg Val Val Se:        | r Gly Ser Arg        | Asp Ala Thr Leu i         | Arg Val Trp Asp        |
| Ile Glu Thr Gly Gl         |                      | S Val Leu Met Gly         | His Val Ala Ala<br>335 |
| Val Arg Cys Val Gl<br>340  | n Tyr Asp Gly        | y Arg Arg Val Val         | Ser Gly Ala Tyr<br>350 |
| Asp Phe Met Val Ly         | ys Val Trp As        |                           | Thr Cys Leu His        |
| Thr Leu Gln Gly H:         | is Thr Asn Ar<br>375 | g Val Tyr Ser Leu<br>380  | Gln Phe Asp Gly        |
| Ile His Val Val S          | er Gly Ser Le<br>390 | eu Asp Thr Ser Ile<br>395 | Arg Val Trp Asp        |
|                            | sn Cys Ile H         | is Thr Leu Thr Gly        | His Gln Ser Leu<br>415 |

Asn Arg Ile Val Ser Gly Ser Asp Asp Asn Thr Leu Lys Val Trp Ser

Thr Ser Gly Met Glu Leu Lys Asp Asn Ile Leu Val Ser Gly Asn Ala 420 425 430

Asp Ser Thr Val Lys Ile Trp Asp Ile Lys Thr Gly Gln Cys Leu Gln 435

Thr Leu Gln Gly Pro Asn Lys His Gln Ser Ala Val Thr Cys Leu Gln 450 455 460

Phe Asn Lys Asn Phe Val Ile Thr Ser Ser Asp Asp Gly Thr Val Lys
465 470 480

Leu Trp Asp Leu Lys Thr Gly Glu Phe Ile Arg Asn Leu Val Thr Leu
485 490 495

Glu Ser Gly Gly Ser Gly Gly Val Val Trp Arg Ile Arg Ala Ser Asn 500 505 510

Thr Lys Leu Val Cys Ala Val Gly Ser Arg Asn Gly Thr Glu Glu Thr 515 520 525

Lys Leu Leu Val Leu Asp Phe Asp Val Asp Met Lys 530 535

<210> 11

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide primer

<400> 11

cgggatccac catggatgat ggatcgatga cacc

| <210>  | 12                                  |    |
|--------|-------------------------------------|----|
| <211>  | 33                                  |    |
| <212>  | DNA                                 |    |
| <213>  | Artificial Sequence                 |    |
|        |                                     |    |
| <220>  |                                     |    |
| <223>  | Description of Artificial Sequence: |    |
|        | Oligonucleotide primer              |    |
|        |                                     |    |
| <400>  | 12                                  |    |
| ggaatt | cctt aagggtatac agcatcaaag tcg      | 33 |
|        |                                     |    |
| <210>  |                                     |    |
| <211>  |                                     |    |
| <212>  |                                     |    |
| <213>  | Artificial Sequence                 |    |
| <220>  |                                     |    |
|        | Description of Artificial Sequence: |    |
|        | Oligonucleotide primer              |    |
|        |                                     |    |
| <400>  | 13                                  |    |
| tcactt | ccatg tocacatoaa agtoo              | 25 |
|        |                                     |    |
| <210>  | 14                                  |    |
| <211>  | 26                                  |    |
| <212>  | DNA                                 |    |
| <213>  | Artificial Sequence                 |    |
|        |                                     |    |
| <220>  |                                     |    |
| <223>  | Description of Artificial Sequence: |    |
|        | Oligonucleotide primer              |    |
|        |                                     |    |
| <400>  |                                     |    |
| ggtaat | ttaca agttcttgtt gaactg             | 26 |

| <210>  | 15                                  |    |
|--------|-------------------------------------|----|
| <211>  | 22                                  |    |
| <212>  | DNA                                 |    |
| <213>  | Artificial Sequence                 |    |
|        |                                     |    |
| <220>  |                                     |    |
| <223>  | Description of Artificial Sequence: |    |
|        | Oligonucleotide primer              |    |
|        |                                     |    |
| <400>  |                                     |    |
| ccctgo | caacg tgtgtagaca gg                 | 22 |
| 010    |                                     |    |
| <210>  |                                     |    |
| <211>  |                                     |    |
| <212>  | Artificial Sequence                 |    |
| ~213/  | Attitual Sequence                   |    |
| <220>  |                                     |    |
|        | Description of Artificial Sequence: |    |
|        | Oligonucleotide primer              |    |
|        |                                     |    |
| <400>  | 16                                  |    |
| ccagto | ctctg cattccacac tttg               | 24 |
|        |                                     |    |
| <210>  | 17                                  |    |
| <211>  | 23                                  |    |
| <212>  | DNA                                 |    |
| <213>  | Artificial Sequence                 |    |
|        |                                     |    |
| <220>  |                                     |    |
| <223>  | Description of Artificial Sequence: |    |
|        | Oligonucleotide primer              |    |
|        |                                     |    |
| <400>  | 17                                  |    |

ctcagacagg tcaggacatt tgg

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<210> 18
<211> 33
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:
      Oligonucleotide primer
<400> 18
ggaattccat gaaaagattg gaccatggtt ctg
                                                                  33
<210> 19
<211> 34
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:
      Oligonucleotide primer
<400> 19
                                                                   34
ggaattcctc acttcatgtc acatcaaagt ccag
<210> 20
<211> 1881
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: 6 myc tagged
      homo sapiens
<400> 20
atggagcaaa agctcatttc tgaagaggac ttgaatgaaa tggagcaaaa gctcatttct 60
gaagaggact tgaatgaaat ggagcaaaag ctcatttctg aagaggactt gaatgaaatg 120
```

gagcaaaagc tcatttctga agaggacttg aatgaaatgg agcaaaagct catttctgaa 180

```
gaggacttga atgaaatgga gagcttgggc gacctcacca tggagcaaaa gctcatttct 240
gaagaggact tgaattccat gaaaagaaag ttggaccatg gttctgaggt ccgctctttt 300
tetttgggaa agaaaceatg caaagtetea gaatatacaa gtaceaetgg gettgtacea 360
tgttcagcaa caccaacaac ttttggggac ctcagagcag ccaatggcca agggcaacaa 420
cgacgccgaa ttacatctgt ccagccacct acaggcctcc aggaatggct aaaaatgttt 480
cagagetgga gtggaceaga gaaattgett getttagatg aacteattga tagttgtgaa 540
ccaacacaag taaaacatat gatgcaagtg atagaacccc agtttcaacg agacttcatt 600
tcattgctcc ctaaagagtt ggcactctat gtgctttcat tcctggaacc caaagacctg 660
ctacaagcag ctcagacatg tcgctactgg agaatttttgg ctgaagacaa ccttctctgg 720
agagagaaat gcaaagaaga ggggattgat gaaccattgc acatcaagag aagaaaagta 780
ataaaaccag gtttcataca cagtccatgg aaaagtgcat acatcagaca gcacagaatt 840
gatactaact ggaggcgagg agaactcaaa tctcctaagg tgctgaaagg acatgatgat 900
catgtgatca catgcttaca gttttgtggt aaccgaatag ttagtggttc tgatgacaac 960
actttaaaag tttggtcagc agtcacaggc aaatgtctga gaacattagt gggacataca 1020
ggtggagtat ggtcatcaca aatgagggac aacatcatca ttagtggatc tacagatcgg 1080
acactcaaag tgtggaatgc agagactgga gaatgtatac acaccttata tgggcatact 1140
tccactgtgc gttgtatgca tcttcatgaa aaaagagttg ttagcggttc tcgagatgcc 1200
actcttaggg tttgggatat tgagacaggc cagtgtttac atgttttgat gggtcatgtt 1260
gcagcagtcc gctgtgttca atatgatggc aggagggttg ttagtggagc atatgatttt 1320
atggtaaagg tgtgggatcc agagactgaa acctgtctac acacgttgca ggggcatact 1380
aatagagtet atteattaca gtttgatggt atecatgtgg tgagtggate tettgataca 1440
tccatccgtg tttgggatyt ggagacaggg aattgcattc acacgttaac agggcaccag 1500
tcgttaacaa gtggaatgga actcaaagac aatattcttg tctctgggaa tgcagattct 1560
acagttaaaa tetgggatat caaaacagga cagtgtttac aaacattgca aggteecaac 1620
aagcatcaga gtgctgtgac ctgtttacag ttcaacaaga actttgtaat taccagctca 1680
gatgatggaa ctgtaaaact atgggacttg aaaacgggtg aatttattcg aaacctagtc 1740
acattggaga gtggggggg tgggggggtt gtgtggcgga tcagagcctc aaacacaaag 1800
ctggtgtgtg cagttgggag tcggaatggg actgaagaaa ccaagctgct ggtgctggac 1860
                                                                  1881
tttgatgtgg acatgaagtg a
```

```
<210> 21
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<220>

<sup>&</sup>lt;211> 626

<sup>&</sup>lt;212> PRT

<sup>&</sup>lt;213> Artificial Sequence

| homo sapien  |
|--|
| <400> 21   |
| Met Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn Glu Met Glu Gln              |
| 1 5 10 15  |
| Lys Leu Ile Ser Glu Glu Asp Leu Asn Glu Met Glu Gln Lys Leu Ile 20 25 30     |
| Ser Glu Glu Asp Leu Asn Glu Met Glu Gln Lys Leu Ile Ser Glu Glu  35 40 45    |
| Asp Leu Asn Glu Met Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn 50 55 60     |
| Glu Met Glu Ser Leu Gly Asp Leu Thr Met Glu Gln Lys Leu Ile Ser  70 75 80    |
| Glu Glu Asp Leu Asn Ser Met Lys Arg Lys Leu Asp His Gly Ser Glu  85 90 95    |
| Val Arg Ser Phe Ser Leu Gly Lys Lys Pro Cys Lys Val Ser Glu Tyr  100 105 110 |
| Thr Ser Thr Thr Gly Leu Val Pro Cys Ser Ala Thr Pro Thr Thr Phe 115 120 125  |
| Gly Asp Leu Arg Ala Ala Asn Gly Gln Gly Gln Gln Arg Arg Ile  130 135 140     |
| Thr Ser Val Gln Pro Pro Thr Gly Leu Gln Glu Trp Leu Lys Met Phe              |
| 145 150 155 160  |
| Gln Ser Trp Ser Gly Pro Glu Lys Leu Leu Ala Leu Asp Glu Leu Ile              |
| 165 170 175  |

<223> Description of Artificial Sequence: 6 myc tagged

| Asp         | Ser  | Cys      | Glu    | Pro      | Thr  | Gln      | Val | Lys   | His      | Met   | Met     | Gln | Val    | Ile | Glu        |
|-------------|------|----------|--------|----------|------|----------|-----|-------|----------|-------|---------|-----|--------|-----|------------|
|             |      |          | 180    |          |      |          |     | 185   |          |       |         |     | 190    |     |            |
|             |      |          |        |          |      |          |     |       |          |       |         |     |        |     |            |
| Pro         | Gln  | Phe      | Gln    | Arg      | Asp  | Phe      | Ile | Ser   | Leu      | Leu   | Pro     | Lys | Glu    | Leu | Ala        |
|             |      | 195      |        |          | _    |          | 200 |       |          |       |         | 205 |        |     |            |
|             |      |          |        |          |      |          |     |       |          |       |         |     |        |     |            |
| •           | m    | **- 1    | •      | <b>9</b> | Dl   | •        | Q1  | D     | •        |       | • • • • | Ŧ   | 01     | 31- | 31-        |
| Leu         |      | vaı      | Leu    | ser      | Pne  | Leu      | GIU | Pro   | Lys      | Asp   |         | Leu | GIN    | Ala | Ala        |
|             | 210  |          |        |          |      | 215      |     |       |          |       | 220     |     |        |     |            |
|             |      |          |        |          |      |          |     |       |          |       |         |     |        |     |            |
| Gln         | Thr  | Cys      | Arg    | Tyr      | Trp  | Arg      | Ile | Leu   | Ala      | Glu   | Asp     | Asn | Leu    | Leu | Trp        |
| 225         |      |          |        |          | 230  |          |     |       |          | 235   |         |     |        |     | 240        |
|             |      |          |        |          |      |          |     |       |          |       |         |     |        |     |            |
| Arg         | Glu  | Lys      | Cys    | Lys      | Glu  | Glu      | Gly | Ile   | Asp      | Glu   | Pro     | Leu | His    | Ile | Lys        |
|             |      |          |        | 245      |      |          |     |       | 250      |       |         |     |        | 255 |            |
|             |      |          |        |          |      |          |     |       |          |       |         |     |        |     |            |
| Arg         | Arg  | Lys      | Val    | Ile      | Lys  | Pro      | Gly | Phe   | Ile      | His   | Ser     | Pro | Trp    | Lys | Ser        |
|             |      |          | 260    |          |      |          |     | 265   |          |       |         |     | 270    |     |            |
|             |      |          |        |          |      |          |     |       |          |       |         |     |        |     |            |
| Δla         | ጥኒም  | Tle      | Ara    | Gln      | Hic  | Arg      | Tla | Δen   | Thr      | Δan   | Trn     | Δrα | Δrα    | Glv | Glu        |
| 1114        | -1-  | 275      | **** 9 | 0111     | 1110 | 111.9    | 280 | пор   |          | 11011 | 110     | 285 | **** 9 | 011 | 014        |
|             |      | 213      |        |          |      |          | 200 |       |          |       |         | 203 |        |     |            |
|             | _    |          | _      | _        |      |          |     |       |          |       |         |     |        | •   |            |
| Leu         |      | Ser      | Pro    | Lys      | Val  | Leu      | ГÀ2 | Gly   | His      | Asp   |         | His | Val    | Ile | Thr        |
|             | 290  |          |        |          |      | 295      |     |       |          |       | 300     |     |        |     |            |
|             |      |          |        |          |      |          |     |       |          |       |         |     |        |     |            |
| Сув         | Leu  | Gln      | Phe    | Cys      | Gly  | Asn      | Arg | Ile   | Val      | Ser   | Gly     | Ser | Asp    | Asp | Asn        |
| 305         |      |          |        |          | 310  |          |     |       |          | 315   |         |     |        |     | 320        |
|             |      |          |        |          |      |          |     |       |          |       |         |     |        |     |            |
| Thr         | Leu  | Lys      | Val    | Trp      | Ser  | Ala      | Val | Thr   | Gly      | Lys   | Суѕ     | Leu | Arg    | Thr | Leu        |
|             |      |          |        | 325      |      |          |     |       | 330      |       |         |     |        | 335 |            |
|             |      |          |        |          |      |          |     |       |          |       |         |     |        |     |            |
| Val         | Glv  | His      | Thr    | Gly      | Gly  | Val      | Trp | Ser   | Ser      | Gln   | Met     | Ara | Asp    | Asn | Ile        |
|             | 4    |          | 340    | 2        | 4    |          |     | 345   |          |       |         | 3   | 350    |     | · <b>-</b> |
|             |      |          | 5 2 0  |          |      |          |     | J 4.J |          |       |         |     | 230    |     |            |
| <b>-</b> 7. | T1 - | <b>~</b> | 01     | <b>a</b> | m1   | <b>3</b> | 3   | m1    | <b>.</b> |       | ty 7    | m   | 3.00   | 23. | <b>~1</b>  |
| тте         | тте  |          | GТĀ    | ser      | rnr  | Asp      |     | rnr   | ьeu      | rys   | val     | _   | ASN    | AIA | GIU        |
|             |      | 355      |        |          |      |          | 360 |       |          |       |         | 365 |        |     |            |

| Thr | Gly | Glu | Cys | Ile | His | Thr | Leu | Tyr | Gly | His | Thr | Ser | Thr | Val | Arg |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|     | 370 |     |     |     |     | 375 |     |     |     |     | 380 |     |     |     |     |
|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

Cys Met His Leu His Glu Lys Arg Val Val Ser Gly Ser Arg Asp Ala 385 390 395 400

Thr Leu Arg Val Trp Asp Ile Glu Thr Gly Gln Cys Leu His Val Leu
405 410 415

Met Gly His Val Ala Ala Val Arg Cys Val Gln Tyr Asp Gly Arg Arg

Val Val Ser Gly Ala Tyr Asp Phe Met Val Lys Val Trp Asp Pro Glu
435 440 445

Thr Glu Thr Cys Leu His Thr Leu Gln Gly His Thr Asn Arg Val Tyr
450 455 460

Ser Leu Gln Phe Asp Gly Ile His Val Val Ser Gly Ser Leu Asp Thr 465 470 475 480

Ser Ile Arg Val Trp Asp Val Glu Thr Gly Asn Cys Ile His Thr Leu
485 490 495

Thr Gly His Gln Ser Leu Thr Ser Gly Met Glu Leu Lys Asp Asn Ile
500 505 510

Leu Val Ser Gly Asn Ala Asp Ser Thr Val Lys Ile Trp Asp Ile Lys
515 520 525

Thr Gly Gln Cys Leu Gln Thr Leu Gln Gly Pro Asn Lys His Gln Ser 530 535 540

Ala Val Thr Cys Leu Gln Phe Asn Lys Asn Phe Val Ile Thr Ser Ser 545 550 550 560

Asp Asp Gly Thr Val Lys Leu Trp Asp Leu Lys Thr Gly Glu Phe Ile

565 570 575

Arg Asn Leu Val Thr Leu Glu Ser Gly Gly Ser Gly Gly Val Val Trp 580 585 590

Arg Ile Arg Ala Ser Asn Thr Lys Leu Val Cys Ala Val Gly Ser Arg

Asn Gly Thr Glu Glu Thr Lys Leu Leu Val Leu Asp Phe Asp Val Asp 610 615 620

Met Lys

625

<210> 22

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide primer

<400> 22

gggtacccct cattattccc tcgagttctt c

31

<210> 23

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide primer

ggaattcctt catgtccaca tcaaagtcc

29

<210> 24

<211> 2010

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: V5HIS tagged homo sapien

<400> 24

atgtgtgtcc cgagaagcgg tttgatactg agctgcattt gcctttactg tggagttttg 60 ttgccggttc tgctccctaa tcttcctttt ctgacgtgcc tgagcatgtc cacattagaa 120 tctgtgacat acctacctga aaaaggttta tattgtcaga gactgccaag cagccggaca 180 cacgggggca cagaatcact gaaggggaaa aatacagaaa atatgggttt ctacggcaca 240 ttaaaaatga ttttttacaa aatgaaaaga aagttggacc atggttctga ggtccgctct 300 ttttctttgg gaaagaaacc atgcaaagtc tcagaatata caagtaccac tgggcttgta 360 ccatgttcag caacaccaac aacttttggg gacctcagag cagccaatgg ccaagggcaa 420 caacgacgcc gaattacatc tgtccagcca cctacaggcc tccaggaatg gctaaaaatg 480 tttcagagct ggagtggacc agagaaattg cttgctttag atgaactcat tgatagttgt 540 gaaccaacac aagtaaaaca tatgatgcaa gtgatagaac cccagtttca acgagacttc 600 atttcattgc tccctaaaga gttggcactc tatgtgcttt cattcctgga acccaaagac 660 ctgctacaag cagctcagac atgtcgctac tggagaattt tggctgaaga caaccttctc 720 tggagagaga aatgcaaaga agaggggatt gatgaaccat tgcacatcaa gagaagaaaa 780 gtaataaaac caggtttcat acacagtcca tggaaaagtg catacatcag acagcacaga 840 attgatacta actggaggcg aggagaactc aaatctccta aggtgctgaa aggacatgat 900 gatcatgtga tcacatgctt acagttttgt ggtaaccgaa tagttagtgg ttctgatgac 960 aacactttaa aagtttggtc agcagtcaca ggcaaatgtc tgagaacatt agtgggacat 1020 acaggtggag tatggtcatc acaaatgaga gacaacatca tcattagtgg atctacagat 1080 cggacactca aagtgtggaa tgcagagact ggagaatgta tacacacctt atatgggcat 1140 acttccactg tgcgttgtat gcatcttcat gaaaaaagag ttgttagcgg ttctcgagat 1200 gccactctta gggtttggga tattgagaca ggccagtgtt tacatgtttt gatgggtcat 1260 gttgcagcag tccgctgtgt tcaatatgat ggcaggaggg ttgttagtgg agcatatgat 1320 tttatggtaa aggtgtggga tccagagact gaaacctgtc tacacacgtt gcaggggcat 1380 actaatagag tetatteatt acagtttgat ggtatecatg tggtgagtgg atetettgat 1440

acatcaatcc gtgtttggga tgtggagaca gggaattgca ttcacacgtt aacagggcac 1500 cagtcgttaa caagtggaat ggaactcaaa gacaatattc ttgtctctgg gaatgcagat 1560 tctacagtta aaatctggga tatcaaaaca ggacagtgtt tacaaacatt gcaaggtccc 1620 aacaagcatc agagtgctgt gacctgttta cagttcaaca agaactttgt aattaccagc 1680 tcagatgatg gaactgtaaa actatgggac ttgaaaacgg gtgaatttat tcgaaaccta 1740 gtcacattgg agagtggggg gagtgggga gttgtgtggc ggatcagagc ctcaaacaca 1800 aagctggtgt gtgcagttgg gagtcggaat gggactgaag aaaccaagct gctggtgctg 1860 gactttgatg tggacatgaa ggaattctgc agatatccag cacagtggcg gccgctcgag 1920 tctagagggc ccttcgaagg taagcctatc cctaaccctc tcctcggtct cgattctacg 1980 cgtaccggtc atcatcacca tcaccattga

<210> 25

<211> 669

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: V5HIS tagged homo sapien

<400> 25

Met Cys Val Pro Arg Ser Gly Leu Ile Leu Ser Cys Ile Cys Leu Tyr

1 5 10 15

Cys Gly Val Leu Leu Pro Val Leu Leu Pro Asn Leu Pro Phe Leu Thr
20 25 30

Cys Leu Ser Met Ser Thr Leu Glu Ser Val Thr Tyr Leu Pro Glu Lys  $35 \hspace{1.5cm} 40 \hspace{1.5cm} 45$ 

Gly Leu Tyr Cys Gln Arg Leu Pro Ser Ser Arg Thr His Gly Gly Thr
50 55 60

Glu Ser Leu Lys Gly Lys Asn Thr Glu Asn Met Gly Phe Tyr Gly Thr
65 70 75 80

| Leu Lys Met Ile Phe Tyr Lys Met Lys Arg Lys Leu Asp His Gly Ser  85 90 95        |
|--|
| Glu Val Arg Ser Phe Ser Leu Gly Lys Lys Pro Cys Lys Val Ser Glu  100 105 110     |
| Tyr Thr Ser Thr Thr Gly Leu Val Pro Cys Ser Ala Thr Pro Thr Thr  115 120 125     |
| Phe Gly Asp Leu Arg Ala Ala Asn Gly Gln Gly Gln Gln Arg Arg Arg  130 135 140     |
| Ile Thr Ser Val Gln Pro Pro Thr Gly Leu Gln Glu Trp Leu Lys Met  145 150 155 160 |
| Phe Gln Ser Trp Ser Gly Pro Glu Lys Leu Leu Ala Leu Asp Glu Leu  165 170 175     |
| Ile Asp Ser Cys Glu Pro Thr Gln Val Lys His Met Met Gln Val Ile  180 185 190     |
| Glu Pro Gln Phe Gln Arg Asp Phe Ile Ser Leu Leu Pro Lys Glu Leu  195 200 205     |
| Ala Leu Tyr Val Leu Ser Phe Leu Glu Pro Lys Asp Leu Leu Gln Ala 210 215 220      |
| Ala Gln Thr Cys Arg Tyr Trp Arg Ile Leu Ala Glu Asp Asn Leu Leu 225 230 235 240  |
| Trp Arg Glu Lys Cys Lys Glu Glu Gly Ile Asp Glu Pro Leu His Ile  245 250 255     |
| Lys Arg Arg Lys Val Ile Lys Pro Gly Phe Ile His Ser Pro Trp Lys 260 265 270      |

Ser Ala Tyr Ile Arg Gln His Arg Ile Asp Thr Asn Trp Arg Arg Gly

275 280 285

Glu Leu Lys Ser Pro Lys Val Leu Lys Gly His Asp Asp His Val Ile
290 295 300

Thr Cys Leu Gln Phe Cys Gly Asn Arg Ile Val Ser Gly Ser Asp Asp 305

Asn Thr Leu Lys Val Trp Ser Ala Val Thr Gly Lys Cys Leu Arg Thr

Leu Val Gly His Thr Gly Gly Val Trp Ser Ser Gln Met Arg Asp Asn 340 345 345

Ile Ile Ser Gly Ser Thr Asp Arg Thr Leu Lys Val Trp Asn Ala
355 360 365

Glu Thr Gly Glu Cys Ile His Thr Leu Tyr Gly His Thr Ser Thr Val

Arg Cys Met His Leu His Glu Lys Arg Val Val Ser Gly Ser Arg Asp 385 390 395 400

Ala Thr Leu Arg Val Trp Asp Ile Glu Thr Gly Gln Cys Leu His Val

Leu Met Gly His Val Ala Ala Val Arg Cys Val Gln Tyr Asp Gly Arg

Arg Val Val Ser Gly Ala Tyr Asp Phe Met Val Lys Val Trp Asp Pro

Glu Thr Glu Thr Cys Leu His Thr Leu Gln Gly His Thr Asn Arg Val

Tyr Ser Leu Gln Phe Asp Gly Ile His Val Val Ser Gly Ser Leu Asp

Thr Ser Ile Arg Val Trp Asp Val Glu Thr Gly Asn Cys Ile His Thr

Leu Thr Gly His Gln Ser Leu Thr Ser Gly Met Glu Leu Lys Asp Asn 500 505 510

Ile Leu Val Ser Gly Asn Ala Asp Ser Thr Val Lys Ile Trp Asp Ile
515 520 525

Lys Thr Gly Gln Cys Leu Gln Thr Leu Gln Gly Pro Asn Lys His Gln 530 535 540

Ser Ala Val Thr Cys Leu Gln Phe Asn Lys Asn Phe Val Ile Thr Ser 545 550 550

Ser Asp Asp Gly Thr Val Lys Leu Trp Asp Leu Lys Thr Gly Glu Phe 565 570 575

Ile Arg Asn Leu Val Thr Leu Glu Ser Gly Gly Ser Gly Gly Val Val 580 585 590

Trp Arg Ile Arg Ala Ser Asn Thr Lys Leu Val Cys Ala Val Gly Ser 595 600 605

Arg Asn Gly Thr Glu Glu Thr Lys Leu Leu Val Leu Asp Phe Asp Val 610 615 620

Asp Met Lys Glu Phe Cys Arg Tyr Pro Ala Gln Trp Arg Pro Leu Glu 625 630 635 640

Ser Arg Gly Pro Phe Glu Gly Lys Pro Ile Pro Asn Pro Leu Leu Gly 645

Leu Asp Ser Thr Arg Thr Gly His His His His His His His 660 665

<210> 26

<211> 2001

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: MYCHIS tagged homo sapiens

<400> 26

atgtgtgtcc cgagaagcgg tttgatactg agctgcattt gcctttactg tggagttttg 60 ttgccggttc tgctccctaa tcttcctttt ctgacgtgcc tgagcatgtc cacattagaa 120 tctgtgacat acctacctga aaaaggttta tattgtcaga gactgccaag cagccggaca 180 cacgggggca cagaatcact gaaggggaaa aatacagaaa atatgggttt ctacggcaca 240 ttaaaaatga tttttacaa aatgaaaaga aagttggacc atggttctga ggtccgctct 300 ttttctttgg gaaagaaacc atgcaaagtc tcagaatata caagtaccac tgggcttgta 360 ccatgttcag caacaccaac aacttttggg gacctcagag cagccaatgg ccaagggcaa 420 caacgacgcc gaattacatc tgtccagcca cctacaggcc tccaggaatg gctaaaaatg 480 tttcagagct ggagtggacc agagaaattg cttgctttag atgaactcat tgatagttgt 540 gaaccaacac aagtaaaaca tatgatgcaa gtgatagaac cccagtttca acgagacttc 600 atttcattgc tccctaaaga gttggcactc tatgtgcttt cattcctgga acccaaagac 660 ctgctacaag cagctcagac atgtcgctac tggagaattt tggctgaaga caaccttctc 720 tggagagaga aatgcaaaga agaggggatt gatgaaccat tgcacatcaa gagaagaaaa 780 gtaataaaac caggtttcat acacagtcca tggaaaagtg catacatcag acagcacaga 840 attgatacta actggaggeg aggagaactc aaatcteeta aggtgetgaa aggacatgat 900 gatcatgtga tcacatgctt acagttttgt ggtaaccgaa tagttagtgg ttctgatgac 960 aacactttaa aagtttggtc agcagtcaca ggcaaatgtc tgagaacatt agtgggacat 1020 acaggtggag tatggtcatc acaaatgaga gacaacatca tcattagtgg atctacagat 1080 cggacactca aagtgtggaa tgcagagact ggagaatgta tacacacctt atatgggcat 1140 acttccactg tgcgttgtat gcatcttcat gaaaaaagag ttgttagcgg ttctcgagat 1200 gccactctta gggtttggga tattgagaca ggccagtgtt tacatgtttt gatgggtcat 1260 gttgcagcag tccgctgtgt tcaatatgat ggcaggaggg ttgttagtgg agcatatgat 1320 tttatggtaa aggtgtggga tccagagact gaaacctgtc tacacacgtt gcaggggcat 1380 actaatagag totattoatt acagtttgat ggtatocatg tggtgagtgg atotottgat 1440 acatcaatcc gtgtttggga tgtggagaca gggaattgca ttcacacgtt aacagggcac 1500 cagtcgttaa caagtggaat ggaactcaaa gacaatattc ttgtctctgg gaatgcagat 1560 tctacagtta aaatctggga tatcaaaaca ggacagtgtt tacaaacatt gcaaggtccc 1620 aacaagcatc agagtgctgt gacctgttta cagttcaaca agaactttgt aattaccagc 1680 tcagatgatg gaactgtaaa actatgggac ttgaaaacgg gtgaatttat tcgaaaccta 1740 gtcacattgg agagtggggg gagtggggaa gttgtgtggc ggatcagagc ctcaaacaca 1800 aagctggtgt gtgcagttgg gagtcggaat gggactgaag aaaccaagct gctggtgctg 1860 gactttgatg tggacatgaa ggaattctgc agatatccag cacagtggcg gccgctcgag 1920 tctagagggc ccttcgaaca aaaactcatc tcagaagagg atctgaatat gcataccggt 1980 catcatcacc atcaccattg a

<210> 27

<211> 666

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: MYCHIS tagged homo sapiens

<400> 27

Met Cys Val Pro Arg Ser Gly Leu Ile Leu Ser Cys Ile Cys Leu Tyr

1 5 10 15

Cys Gly Val Leu Leu Pro Val Leu Leu Pro Asn Leu Pro Phe Leu Thr
20 25 30

Cys Leu Ser Met Ser Thr Leu Glu Ser Val Thr Tyr Leu Pro Glu Lys  $35 \hspace{1.5cm} 40 \hspace{1.5cm} 45 \hspace{1.5cm}$ 

Gly Leu Tyr Cys Gln Arg Leu Pro Ser Ser Arg Thr His Gly Gly Thr
50 55 60

Glu Ser Leu Lys Gly Lys Asn Thr Glu Asn Met Gly Phe Tyr Gly Thr
65 70 75 80

Leu Lys Met Ile Phe Tyr Lys Met Lys Arg Lys Leu Asp His Gly Ser

| Glu | Val | Arg | Ser | Phe | Ser | Leu | Gly | Lys | Lys | Pro | Суѕ | Lys | Val | Ser | Glu |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |

Tyr Thr Ser Thr Thr Gly Leu Val Pro Cys Ser Ala Thr Pro Thr Thr

Phe Gly Asp Leu Arg Ala Ala Asn Gly Gln Gly Gln Gln Arg Arg Arg 130

Ile Thr Ser Val Gln Pro Pro Thr Gly Leu Gln Glu Trp Leu Lys Met
145 150 150 160

Phe Gln Ser Trp Ser Gly Pro Glu Lys Leu Leu Ala Leu Asp Glu Leu 165 170 175

Ile Asp Ser Cys Glu Pro Thr Gln Val Lys His Met Met Gln Val Ile
180 185 190

Glu Pro Gln Phe Gln Arg Asp Phe Ile Ser Leu Leu Pro Lys Glu Leu
195 200 205

Ala Leu Tyr Val Leu Ser Phe Leu Glu Pro Lys Asp Leu Leu Gln Ala 210 215 220

Ala Gln Thr Cys Arg Tyr Trp Arg Ile Leu Ala Glu Asp Asn Leu Leu 225 230 230

Trp Arg Glu Lys Cys Lys Glu Glu Gly Ile Asp Glu Pro Leu His Ile

Lys Arg Arg Lys Val Ile Lys Pro Gly Phe Ile His Ser Pro Trp Lys
260 265 270

Ser Ala Tyr Ile Arg Gln His Arg Ile Asp Thr Asn Trp Arg Arg Gly

275 280 285

Glu Leu Lys Ser Pro Lys Val Leu Lys Gly His Asp Asp His Val Ile
290 295 300

Thr Cys Leu Gln Phe Cys Gly Asn Arg Ile Val Ser Gly Ser Asp Asp 305

Asn Thr Leu Lys Val Trp Ser Ala Val Thr Gly Lys Cys Leu Arg Thr

Leu Val Gly His Thr Gly Gly Val Trp Ser Ser Gln Met Arg Asp Asn 340

Ile Ile Ser Gly Ser Thr Asp Arg Thr Leu Lys Val Trp Asn Ala 355

Glu Thr Gly Glu Cys Ile His Thr Leu Tyr Gly His Thr Ser Thr Val

Arg Cys Met His Leu His Glu Lys Arg Val Val Ser Gly Ser Arg Asp 385

Ala Thr Leu Arg Val Trp Asp Ile Glu Thr Gly Gln Cys Leu His Val

Leu Met Gly His Val Ala Ala Val Arg Cys Val Gln Tyr Asp Gly Arg

Arg Val Val Ser Gly Ala Tyr Asp Phe Met Val Lys Val Trp Asp Pro

Glu Thr Glu Thr Cys Leu His Thr Leu Gln Gly His Thr Asn Arg Val

Tyr Ser Leu Gln Phe Asp Gly Ile His Val Val Ser Gly Ser Leu Asp 465

| Thr Ser Ile Arg Val Trp Asp Val Glu Thr Gly Asn Cys Ile His Thr 485 490 495      |
|--|
| Leu Thr Gly His Gln Ser Leu Thr Ser Gly Met Glu Leu Lys Asp Asn 500 505 510      |
| Ile Leu Val Ser Gly Asn Ala Asp Ser Thr Val Lys Ile Trp Asp Ile 515 520 525      |
| Lys Thr Gly Gln Cys Leu Gln Thr Leu Gln Gly Pro Asn Lys His Gln 530 540          |
| Ser Ala Val Thr Cys Leu Gln Phe Asn Lys Asn Phe Val Ile Thr Ser  545 550 555 560 |
| Ser Asp Asp Gly Thr Val Lys Leu Trp Asp Leu Lys Thr Gly Glu Phe 565 570 575      |
| Ile Arg Asn Leu Val Thr Leu Glu Ser Gly Gly Ser Gly Gly Val Val 580 585 590      |
| Trp Arg Ile Arg Ala Ser Asn Thr Lys Leu Val Cys Ala Val Gly Ser  595 600 605     |
| Arg Asn Gly Thr Glu Glu Thr Lys Leu Leu Val Leu Asp Phe Asp Val 610 615 620      |
| Asp Met Lys Glu Phe Cys Arg Tyr Pro Ala Gln Trp Arg Pro Leu Glu 625 630 635 640  |
| Ser Arg Gly Pro Phe Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Asn                  |

Met His Thr Gly His His His His His